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Intermountain Power Project
Intermountain Generating Station
SO_2 Emissions Reductions Through
Coal Blending

B&V Project 9255
B&V File 32.0400
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July 15, 1983

Mr. James H. Anthony, Project Manager
Intermountain Power Project
Department of Water and Power
General Office Building, Room 931
P. O. Box 111
Los Angeles, California 90051

Attention: Mr. R. L. Nelson, Project Engineer

Gentlemen:

Enclosed are four (4) preliminary copies of the analysis of SO_2 emissions reductions through coal blending.

These copies are being forwarded for your use in your internal and informal discussions. The analysis will be finalized after we have received your comments and/or approval.

If you have any questions concerning the enclosed analysis, please contact D. O. Swenson (913) 967-7426.

Very truly yours,

BLACK & VEATCH

Donald O. Swenson for

Roger W. Dutton

DOS:vb
Enclosure

IPP DIST	CC
JHA	✓
RLN	✓
JA	
APE	
LEJ	
RCB	
HJC	
ASB	✓
SRS	✓
HDB	
DWF	✓
JAV	
ENF	
TBA	
JAA	
DJW	
HTD	✓
JJC	✓
REG	
GEB	
NFB	✓
AAG	
RGH	
TMO	
PPW	
JPS	
LEE	
AWS	
ED K.	
FMR	✓
RTP	✓
FILE	

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PRELIMINARY
JUL 15 1983

SO_2 EMISSIONS REDUCTIONS THROUGH COAL BLENDING

The State of Utah has proposed a more stringent SO_2 emisssions requirement for the Intermountain Generating Station. The proposed change would limit SO_2 emissions to 0.14 pound per million Btu heat input in lieu of the previous maximum SO_2 emissions of 0.15 pound per million Btu heat input. This requirement would be in addition to the requirement of 90 per cent SO_2 removal efficiency. The SO_2 emissions limit of 0.14 pound per million Btu is attainable with the "typical" sulfur and heating values of the coals contracted for the Intermountain Generating Station. Burning contracted coals with compositions at or near their contract limits for sulfur and heating value and with 90 per cent SO_2 removal efficiency would result in SO_2 emissions very near or in excess of the SO_2 emissions requirement of 0.14 pound per million Btu unless some degree of blending is used. It is anticipated that "as received" coal quality will vary from superior (low sulfur) to marginal or nonconforming quality (high sulfur) from shipment to shipment. With the blending of good quality coal and poor quality or nonconformance coal compliance with the proposed more stringent SO_2 emissions requirement can be obtained.

Coal Blending

Coal for the Intermountain Generating Station will be supplied from approximately six different Utah mines. Each mine will produce coal from several seams. Significant variations in quality can be expected in coal from different mines and also in coal from different seams of a given mine. It is anticipated that efforts will be made by each mining company to blend coal from different areas of their mine so that the coal shipped will be within their contract limits.

The coal handling system at the Intermountain Generating Station for unloading stockout, and reclaim of coal is versatile and inherently includes a high degree of blending capability. These systems are shown in Figure 1. Coal may be unloaded at the Intermountain Generating Station from either rail cars or trucks and stocked out in three locations.

- There is sufficient space to stockout four 36,000 ton piles over the reclaim structure by the stacker. The reclaim system consists of four 200 to 2,000 ton per hour rotary plow feeders. The four active coal piles will accommodate normal stockout and reclaim.
- 26,000 tons of coal can be stocked out in the reserve coal pile. This coal pile will be located close to the reserve reclaim hopper which could accept up to 2,000 tons per hour from mobile equipment.
- An additional 150,000 tons can be stacked out east of the stacker by rotating the stacker 180 degrees. Mobile equipment would be required to reclaim coal from this pile. One self-loading scraper could reasonabley move about 100 tons per hour over to the reserve reclaim hopper.

Higher quality coals can be stocked out toward the one end of the row of four active piles, and lower quality coals can be stocked out toward the other end. Reclaim rates of each of the four rotary plow feeders (Feeders 7A, 7B, 7C, and 7D) under these four active piles can be adjusted between 200 and 2,000 tons per hour, resulting in a blend of coals on conveyor 7.

It is not anticipated that use of the reserve coal stockout or reclaim equipment would be required for coal blending. If an unusually large amount of noncompliance coal was received, the stacker could be rotated 180 degrees to pile the noncompliance coal on the ground east of the stacker. Mobile equipment could then be used to transport this coal to the applicable active coal pile. Sampling of reclaimed (as fired) coal will be at the plant transfer area. Coal inventory records will have to include as-received quality as well as quantity and location data to permit satisfactory operation of any blending system.

SO_2 Emissions

SO_2 emissions requirements of 0.14 pounds SO_2 per million Btu heat input and 90 per cent SO_2 removal can be met by using the flue gas desulfurization system and by blending coals. Coal blending would be used to limit the composite coal sulfur content to less than 0.7 pound per million Btu heat input. With credit given to sulphur removal in the pulverizers composite coal with a sulphur content of 0.72 could be utilized. The flue gas desulfurization system will remove 90 per cent of the SO_2 in the flue gas. The resulting emission rate (in pounds per million Btu of heat input) would be dependent on the quality of the coals burned and on the blending ratios used.

Calculated average SO_2 emission rate for the weighted average of the six coals is 0.10 pounds SO_2 per million Btu of heat input. This emission rate is based on the typical heating value and typical sulfur content for each of the six coals and 90 per cent SO_2 removal efficiency. The average coal as shown in Figure 2 is based on the weighted average quantity of each coal to be burned at Intermountain Generating Station.

With uncontrolled blending the SO_2 emission rate for blended coals is 0.13 pounds SO_2 per million Btu heat input with 90 per cent SO_2 removal efficiency. This estimate was based on the coal flows shown on Figure 3. In each coal pile, the lesser quality (higher sulfur) coal reserve for that coal pile was assumed to be at the rotary plow feeder inlet. Typical values for sulfur content and heating value were used for each coal, except for Coal Reserve G. The sulfur content and heating value of Coal G. The four rotary plow feeder rates were assumed to be equal. Therefore under these conditions coal blending will provide compliance with a more stringent SO_2 emissions limit of 0.14 pound SO_2 per million Btu heat input in addition to 90 per cent SO_2 removal efficiency.

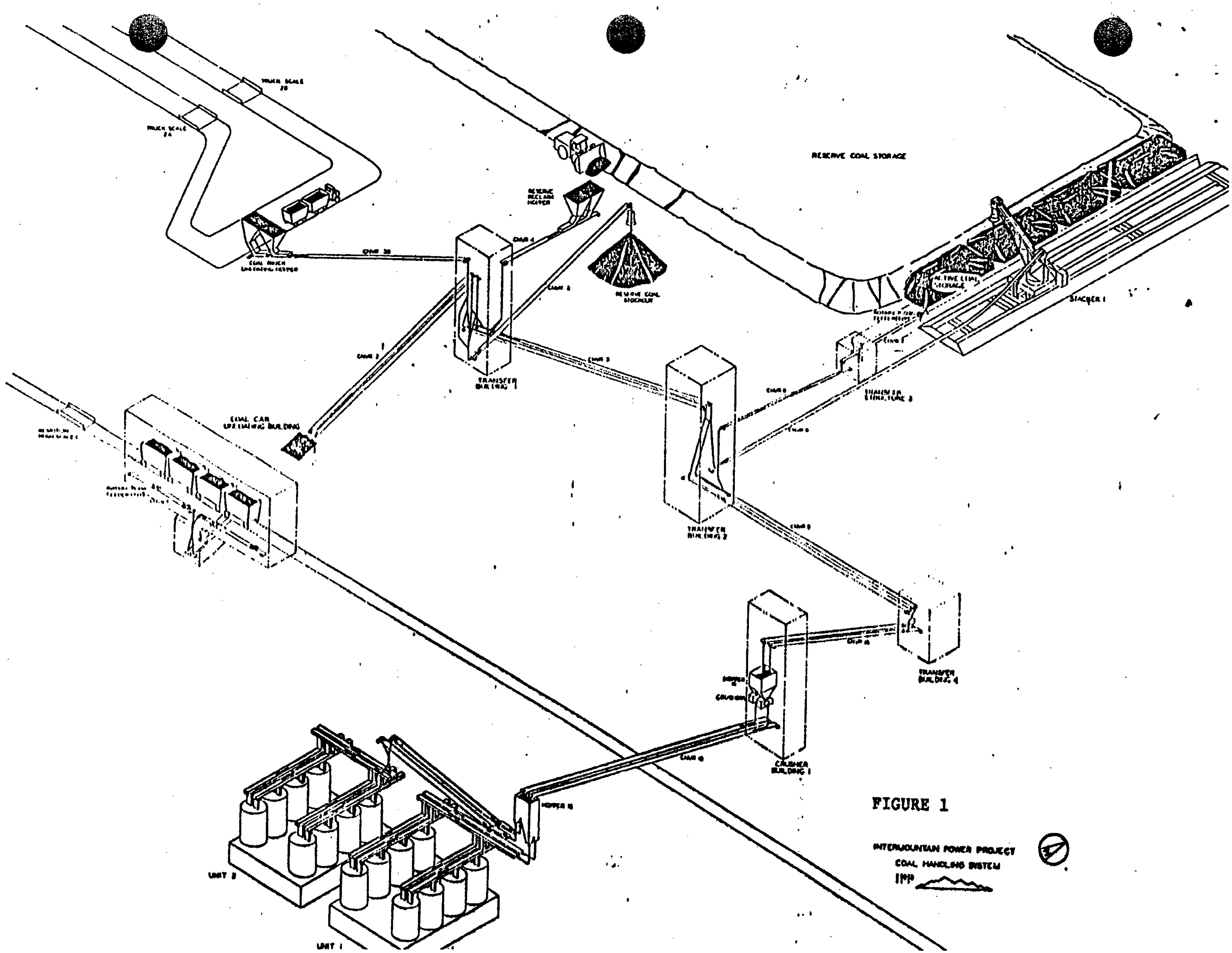
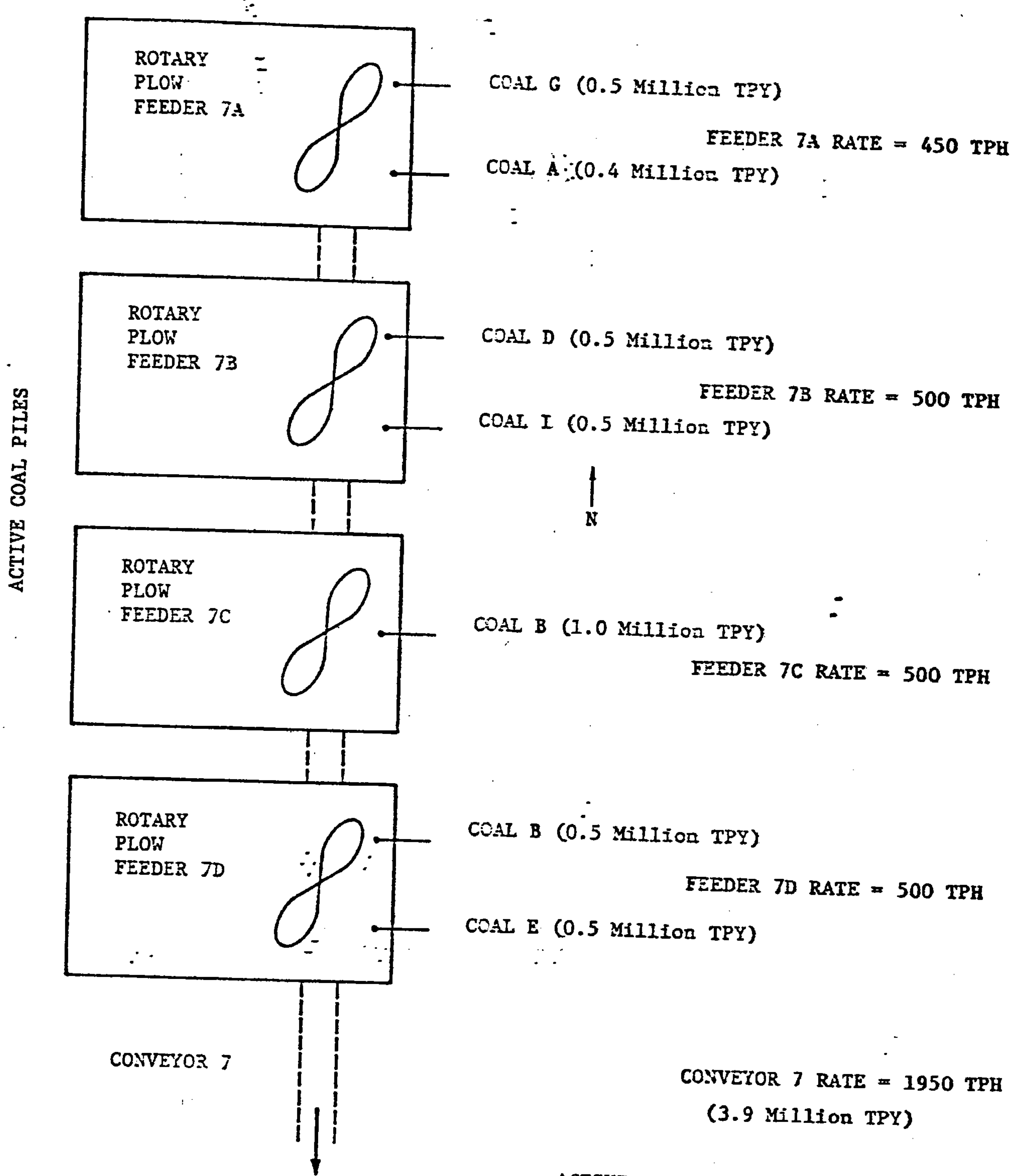


FIGURE 1

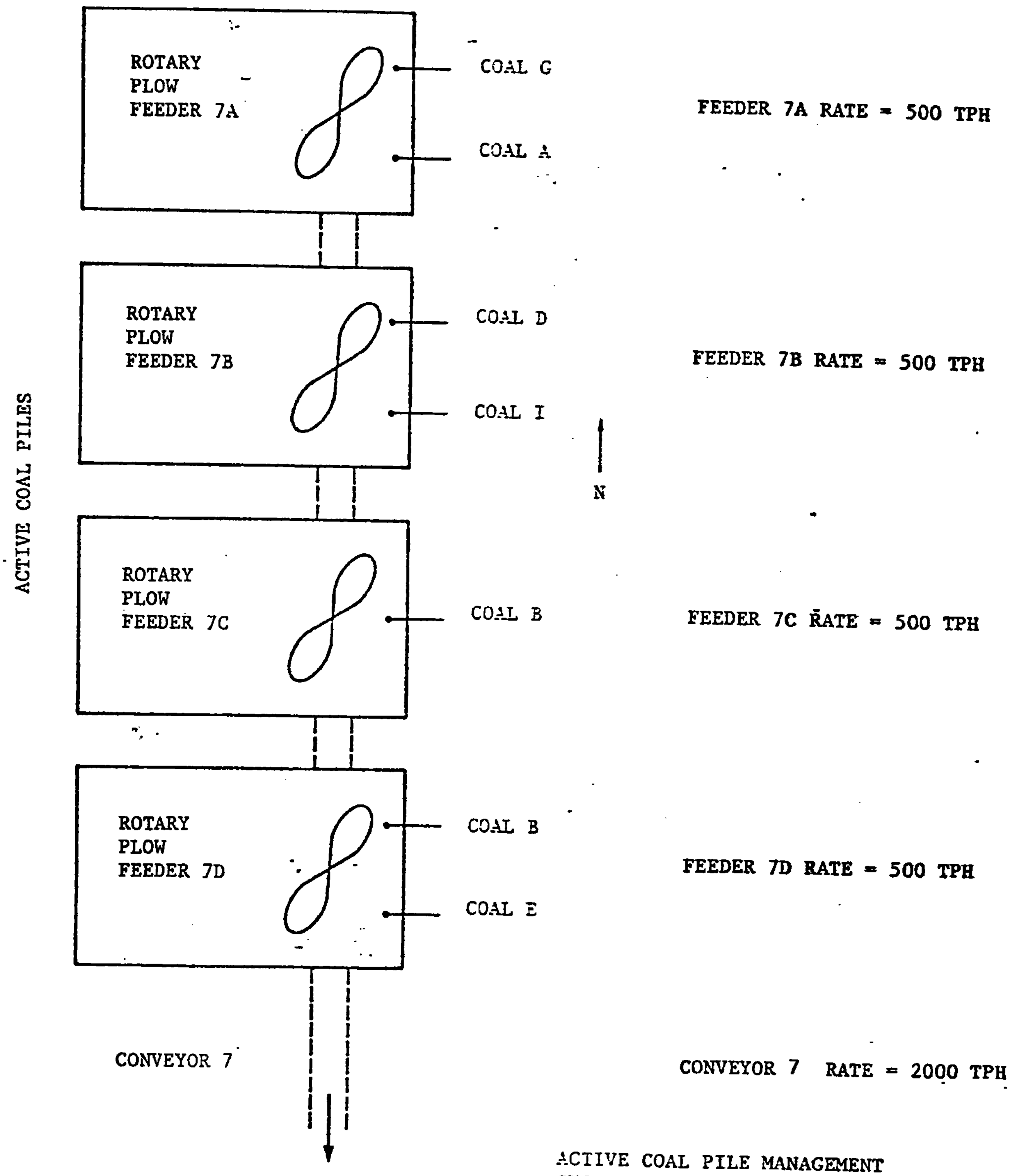
INTERMOUNTAIN POWER PROJECT
COAL HANDLING SYSTEM
IPP



ACTIVE COAL PILE MANAGEMENT SYSTEM FOR SO_2 EMISSIONS CONTROL

INTERMOUNTAIN GENERATING STATION

FIGURE 2



ACTIVE COAL PILE MANAGEMENT SYSTEM FOR SO_2 EMISSIONS CONTROL

INTERMOUNTAIN GENERATING STATION

FIGURE 3